City of Lafayette Staff Report

For: Lafayette City Council

By: Christine Sinnette, Senior Planner

Date Written: June 2, 2008

Meeting Date: June 9, 2008

Subject: Final reading and adoption of Ordinance No. 564 revising Chapter 3-9, Gas Shut-Off Devices of the Lafayette Municipal Code (LMC)

Background

At their meeting of May 12, 2008, the City Council conducted a first reading and public hearing on Ordinance No. 564 revising Chapter 3-9, Gas Shut-Off Devices of the Lafayette Municipal Code (LMC). No one spoke during the public hearing portion of the meeting.

Staff Comments

The purpose of Ordinance No. 564 is three-fold (See Attachment 1). First, it revises Chapter 3-9, Gas Shut-Off Devices to remove adoption by reference provisions of the Contra Costa County ordinance code for regulations previously adopted by the City in 2000 and 2006. Second, it incorporates the recommendations of the Lafayette Emergency Preparedness Commission by removing references to seismic gas shut-off devices, requires excess flow gas shut-off devices at each gas appliance which uses a vulnerable appliance fuel connector to connect it to a gas line, and requires that excess flow gas shut-off devices be installed when any work involving fuel gas piping is issued regardless of valuation. Third, it incorporates the provision of County Ordinance No. 2006-44 reducing the threshold valuation of a building permit from $50,000 to $15,000 for additions or alterations when fuel gas piping is not involved in the work.

Adoption of Ordinance No. 564 would impose stricter construction standards than required by the 2007 California Building Standards Code. Health and Safety Code sections 17958.5 and 18941.5 authorize a local jurisdiction to modify or change this Code and establish more restrictive standards if the local jurisdiction finds that the changes and modifications are reasonably necessary because of local climatic, geological or topographical conditions. Attachment 2 contains the findings of need for stricter construction standards due to local climatic, geological and topographical conditions.

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Compliance with the California Environmental Quality Act

Adoption of Ordinance No. 564 and the provisions it contains are exempt from the California Environmental Quality Act (CEQA) pursuant to California Code of Regulations, §15061(b)(3) because this project is covered under the general rule that CEQA applies only to projects that have the potential for causing a significant effect on the environment. Adoption of Ordinance 564 and the administrative code provisions it contains have no potential for causing an effect on the environment.

Recommendation

Staff recommends that the City Council conduct the final reading and approve the following actions as one motion.

The City Council:

- Finds that the project is exempt from the California Environmental Quality Act;
- Adopts the Findings in Support of Need for Stricter Construction Standards due to Local Conditions; and
- Adopts Ordinance No. 564.

Effective Date

This ordinance becomes effective thirty (30) days after its adoption and within 15 days after adoption shall be published once with the names of councilmember voting for or against it in a newspaper published in Contra Costa County.

Attachments

1. Ordinance No. 564
2. Findings of Need for Stricter Construction Standards Due to Local Conditions

BEFORE THE CITY COUNCIL OF THE CITY OF LAFAYETTE

In the Matter of:

Ordinance No. 564

Adoption of revisions to Chapter 3-9, Gas Shut-Off Devices, of the Lafayette Municipal Code requiring excess flow gas shut-off devices in residential, commercial, and industrial buildings

The City Council of the City of Lafayette does ordain as follows:

Section 1. Summary.

This ordinance revises Chapter 3-9, Gas Shut-Off Devices, Lafayette Municipal Code (LMC) by removing adoption by reference provisions of the ordinance code of Contra Costa County, by renumbering the sections, and by requiring excess flow gas shut-off devices in existing residential, commercial, and industrial buildings.

Section 2. Revise title of Chapter 3-9 to read Excess Flow Gas Shut-Off Devices.

Section 3. Revise Section 3-901.

Revise Section 3-901 to read as follows:

3-901 Purpose.
The purpose of this chapter is to require installation of approved excess flow gas shut-off devices in residential, commercial, and industrial buildings under the conditions contained in this chapter.

Section 4. Revise Section 3-903.

Revise section 3-903 to read as follows:

3-903 Definitions.
For the purpose of this chapter, certain terms shall be defined as follows:

(a) "Downstream of Gas Utility Meter" shall refer to all customer owned gas piping.

(b) "Excess Flow Gas Shut-Off Device" shall mean those valves or devices that automatically close a valve to stop the flow of gas, upon detecting an excessively high flow rate that can occur when the downstream gas piping is damaged and leaking gas. This device shall not be the type that is actuated by certain levels of earthquake acceleration, shaking, or vibration. The device shall automatically reopen and permit normal gas flow rates when the integrity of the downstream gas piping has been restored. The device shall be certified by the State Architect or the operational and functional design of the

ATTACHMENT 1

certified by the State Architect or the operational and functional design of the device shall meet or exceed the device certified by the Office of the State Architect. The determination of whether the operational and functional design of the device is at least equal to the device certified by the State Architect may be made by one of the following: the Independent Laboratory of the International Approval Services (IAS), Underwriter's Laboratory (UL), International Association of Plumbing and Mechanical Officials (IAPMO), or other recognized listing and testing agency.

(c) "Residential Building" shall mean any single family dwelling, duplex, multifamily dwelling, apartment building, condominium building, townhouse building, lodging house, congregate residence, hotel, or motel.

(d) "Vulnerable Appliance Fuel Connector" shall mean an assembly of listed semi-rigid or flexible tubing and fittings to carry fuel between a fuel piping outlet and fuel-burning appliance where the connector is susceptible to being broken or damaged by falling objects or by the appliance shifting during an earthquake. This would include, but not be limited to, fuel connectors for clothes dryers, kitchen ranges, and tank-type water heaters regardless of whether or not the appliance is braced, anchored, strapped or fastened in place.

Section 5. Add Section 3-905.

Add Section 3-905 to read as follows:

3-905 Scope.

An approved excess flow gas shut-off device (non-motion sensitive) shall be installed immediately upstream of any vulnerable appliance fuel connector within the following buildings and structures:

(a) In any new building construction (commercial, industrial or residential) containing fuel gas piping for which a building permit is first issued on or after the effective date of this chapter.

(b) In any existing residential building for which a building permit is first issued on or after the effective date of this chapter for work involving fuel gas piping. When a building permit is issued to an individual condominium or apartment unit, an approved excess flow gas shut-off device shall be installed at each new or existing gas appliance which uses a vulnerable appliance fuel connector to connect it to the gas line only in the unit for which the building permit is issued.

(c) In any existing residential building where the value of the alteration or addition is more than fifteen thousand dollars ($15,000) where fuel gas piping is not involved in the work for which a building permit is first issued on or after the effective date of this chapter. Alterations or additions to individual condominium or apartment units shall require an approved excess flow gas shut-off device to be installed at each gas appliance which uses a vulnerable appliance fuel connector to connect it to a gas line in each individual unit that is being altered or added to.

(d) In any existing commercial or industrial building that has fuel gas piping supplying the building for which a building permit is first issued on or after the effective date of this chapter for work involving fuel gas piping. When a

building permit is issued to an individual unit or tenant space, an approved excess flow gas shut-off device shall be installed at each new or existing gas appliance which uses a vulnerable appliance fuel connector to connect it to the gas line only in the unit or tenant space for which the building permit is issued.

(e) In any existing commercial or industrial building where the value of the alteration or addition is more than fifteen thousand dollars ($15,000) where fuel gas piping is not involved in the work for which a building permit is first issued on or after the effective date of this chapter. Alterations or additions to individual units or tenant spaces shall require an approved excess flow gas shut-off device to be installed at each gas appliance which uses a vulnerable appliance fuel connector to connect it to a gas line in each individual unit that is being altered or added to.

Section 6. Add Section 3-907.

Add Section 3-907 to read as follows:

3-907 Exceptions.

(a) Excess flow gas shut-off devices installed on a building before the effective date of this chapter are exempt from the requirements of this chapter provided they remain installed on the building or structure and are maintained for the life of the building or structure.

(b) This chapter does not apply to mechanical or process equipment used in manufacturing.

Section 7. Add section 3-909.

Add section 3-909 to read as follows:

3-909 General Requirements.

Excess flow gas shut-off devices installed either in compliance with this ordinance or voluntarily, with a permit issued on or after the effective date of this chapter, shall comply with all of the following requirements:

(a) Be installed by a contractor licensed in the appropriate classification by the State of California and in accordance with the manufacturer's instructions.

(b) Be certified by the State Architect or be listed by an approved listing and testing agency such as IAS, IAMPO, UL or the Office of the State Architect.

(c) Where excess flow gas shut-off devices are installed voluntarily or as required by this chapter, they shall be maintained for the life of the building or structure or be replaced with a valve or device complying with the requirements of this chapter.

Section 8. Add Section 3-911.

Add Section 3-911 to read as follows:

3-911 List of Approved Valves and Devices.
The Building Inspection Department shall maintain a list of all excess flow gas shut-off devices (non-motion sensitive) which meet or exceed the requirements of devices certified by the Office of the State Architect for installation in the State of California and which comply with the standards and criteria set forth in Health and Safety Code section 19180 *et seq*,.

Section 9. Add section 3-913.

Add section 3-913 to read as follows:

3-913 Enforcing Agency.
The Contra Costa County Building Inspection Department shall administer and enforce the provisions of this chapter.

Section 10. Validity.

The City Council of the City of Lafayette declares that if any section, paragraph, sentence or word of this ordinance as adopted and amended herein is declared for any reason to be invalid, it is the intent of the City Council of the City of Lafayette that it would have passed all other portions or provisions of this ordinance independent of the elimination here from any portion or provision as may be declared invalid.

Section 11. Effective Date.

This ordinance becomes effective thirty (30) days after its adoption and within 15 days after adoption shall be published once with the names of councilmember voting for or against it in a newspaper published in Contra Costa County.

The foregoing ordinance was introduced at a regular meeting of the City Council of the City of Lafayette on May 12, 2008 and was adopted at a regular meeting of the City Council on June 9, 2008, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

_____
Mike Anderson, Mayor

ATTEST:

_____
Joanne Robbins, City Clerk

FINDINGS IN SUPPORT OF NEED FOR STRICTER CONSTRUCTION STANDARDS DUE TO LOCAL CONDITIONS

The California Building Standards Commission has adopted and published the 2007 Building Standards Code, which is comprised of the 2007 California Building, Mechanical, Plumbing and Electrical Codes. These statewide codes become effective January 1, 2008. Although these codes apply statewide, Health and Safety Code sections 17958.5 and 18941.5 authorize a local jurisdiction to modify or change these codes and establish more restrictive building standards if the jurisdiction finds that the modifications and changes are reasonably necessary because of local climatic, geological or topographical conditions.

Ordinance No. 564 amends Chapter 3-9, Gas Shut-Off Devices of the Lafayette Municipal Code which requires installation of excess flow gas shut-off devices in existing and new residential, commercial and industrial buildings. Pursuant to Health and Safety Code section 17958.7, the City Council of the City of Lafayette finds that the more restrictive standards contained in Ordinance No. 564 are reasonably necessary because of the local climatic, geological, and topographic conditions that are described below.

A. Climatic

1. Precipitation and Relative Humidity

(a) Conditions

Precipitation ranges from 15 to 24 inches per year with an average of approximately 20 inches per year. Ninety-six (96) percent falls during the months of October through April and four (4) percent from May through September. This is a dry period of at least five (5) months each year. Additionally, the area is subject to occasional drought. Relative humidity remains in the middle range most of the time. It ranges from forty-five (45) to sixty-five (65) percent during spring, summer, fall, and from sixty (60) to ninety (90) percent in the winter. It occasionally falls as low as fifteen (15) percent.

(b) Impact

Locally experienced dry periods cause extreme dryness of untreated wood shakes and shingles on buildings and non-irrigated grass, brush and weeds, which are often near buildings with wood roofs and sidings. Such dryness causes these materials to ignite very readily and burn rapidly and intensely. Gas fires due to gas line ruptures can also spark and engulf a single family residence during these dry periods.

Because of dryness, a rapidly burning gas fire or exterior building fire can quickly transfer to other buildings by means of radiation or flying brands, sparks or embers. A small fire can rapidly grow to a magnitude beyond

the control capabilities of the Fire District resulting in an excessive fire loss.

2. Temperature

(a) Conditions

Temperatures have been recorded as high as 114° F. Average summer highs are in the 75° - 90° range.

(b) Impact

High temperatures cause rapid fatigue and heat exhaustion of firefighters, thereby reducing their effectiveness and ability to control large building, wildland fires, and fires caused by gas line ruptures.

Another impact from high temperatures is that combustible building material and non-irrigated weeds, grass and brush are preheated, thus causing these materials to ignite more readily and burn more rapidly and intensely. Additionally, the resultant higher temperature of the atmosphere surrounding the materials reduces the effectiveness of the water being applied to the burning materials. This requires that more water be applied, which in turn requires more fire resources in order to control a fire on a hot day. High temperatures directly contribute to the rapid growth of fires to an intensity and magnitude beyond the control capabilities of the Fire District.

3. Winds

(a) Conditions

Prevailing winds in Lafayette are from the north or northwest in the afternoons. However, winds are experienced from virtually every direction at one time or another. Velocities can reach fourteen (14) mph to twenty-three (23) mph ranges, gusting to twenty-five (25) to thirty-five (35) mph. Forty (40) mph winds are experienced occasionally and winds up to fifty-five (55) mph have been registered locally. During the winter half of the year, strong, dry, gusty winds from the north move through the area for several days, creating extremely dry conditions.

(b) Impact

Winds such as those experienced locally can and do exacerbate fires, both interior and exterior, to burn and spread rapidly. Fires involving non-irrigated weeds, grass, brush, and fires caused by gas line ruptures can grow to a magnitude and be fanned to an intensity beyond the control capabilities of the Fire District very quickly even by relatively moderate

winds. When such fires are not controlled, they can extend to nearby buildings, particularly those with untreated wood shakes or shingles.

Winds of the type experienced locally also reduce the effectiveness of exterior water streams used by the Fire District on fires involving large interior areas of buildings, fires which have vented through windows and roofs due to inadequate built-in fire protection and fires involving wood shake and shingle building exteriors. Local winds will continue to be a definite factor toward causing major fire losses to buildings not provided with fire resistive roof and siding materials and buildings with inadequately separated interior areas, or lacking automatic fire protection systems, or lacking proper gas shut-off devices to shut off gas when pipes are ruptured, or lacking proper electrical systems. National statistics frequently cite wind conditions, such as those experienced locally, as a major factor where conflagrations have occurred.

4. Summary

These local climatic conditions affect the acceleration, intensity, and size of fire in Lafayette. Time of little or no rainfall, of low humidity, and high temperatures create extremely hazardous conditions, particularly as they relate to wood shake and shingle roof fires and conflagrations. The winds experienced in Lafayette can have a tremendous impact upon structure fires. During wood shake and shingle roof fires, or exposure fires, or gas fires, winds can carry sparks and burning brands to other structures, thus spreading the fire and causing conflagrations. In building fires, winds can literally force fires back into the building and can create a blow torch effect, in addition to preventing "natural" ventilation and cross-ventilation efforts.

B. Geological and Topographic

1. Seismicity

(a) Conditions

The city of Lafayette is located in Contra Costa County which is located in Seismic Risk Zone 4, the worst earthquake area in the United States. Buildings and other structures in Zone 4 can experience major seismic damage. Lafayette is in close proximity to numerous earthquake faults including the San Andreas Fault, Hayward, Calaveras, Concord, Antioch, Mt. Diablo, and other lesser faults. A 4.1 earthquake with its epicenter in Contra Costa County in 1958, and a 5.4 earthquake with its epicenter also in Contra Costa County occurred in 1955. The Concord and Antioch faults have a potential for a Richter 6 earthquake and the Hayward and Calaveras faults have the potential for a Richter 7 earthquake. Minor tremblers from seismic activity are not uncommon in the area.

A study released in 1990 by the United States Geological Survey says that there is a 67% chance of another earthquake the size of Loma Prieta during the next 30 years, and that the quake could strike at any time, including today. Scientists, therefore, believe that an earthquake of a magnitude 7 or larger is now twice as likely to happen as to not happen.

Interstates 680 and 24 run nearby or adjacent to Lafayette. An overpass or undercrossing collapse would significantly alter the response route and time for responding emergency equipment. This is due to limited crossings of the interstate and that in some areas there is only one surface street, which runs parallel to the interstate, which would be congested during a significant emergency.

Earthquakes of the magnitude experienced locally can cause major damage to electrical transmission facilities and to gas and electrical lines in buildings, which in turn start fires. The occurrence of multiple fires will quickly deplete existing fire department resources; thereby reducing and/or delaying their response to any given fire.

One cause of post-earthquake fires is overturned gas appliances such as dryers, unstrapped water heaters, furnaces, and gas ranges. Requiring excess flow gas shut-off valves on fuel burning appliances would reduce the risk of explosion and fire, thereby reducing property damage and injury to humans.

(b) Impact

A major earthquake could severely restrict the response of the Contra Costa County Fire District and their capability to control fires involving buildings of wood frame construction, with ordinary roofing materials and flammable exteriors, or with large interior areas not provided with automatic smoke and fire control systems. Also, when buildings not equipped with earthquake structural support move off their foundations, gas pipes may rupture. Fires develop from line ruptures and spread from house to house, causing an extreme demand for fire protection resources. The proximity of Lafayette to fault traces, necessitates adopting stricter structural construction standards.

2. Soils

(a) Conditions

The area is replete with various soils, which are unstable, clay loam and alluvial fans being predominant. These soil conditions are moderately to severely prone to swelling and shrinking, are plastic, and tend to liquefy.

(b) Impact

Throughout Lafayette, the topography and development growth has created a network of older, narrow roads. These roads vary from gravel to asphalt surface and vary in percent of slope, many exceeding twenty (20) percent. Several of these roads extend up through the winding passageways in the hills providing access to remote, affluent housing subdivisions. The majority of these roads are private with no established maintenance program. During inclement weather, these roads are subject to rock and mudslides, as well as down trees, obstructing all vehicle traffic. It is anticipated that during an earthquake, several of these roads would be impassable so as to prevent fire protection resources from reaching fires cause by gas line ruptures or other sources.

3. Topographic

(a) Conditions

Lafayette is built primarily on hillside lands with slopes ranging up to 30 percent. The arrangement and location of natural and manmade surface features, including hills, creeks, canals, freeways, housing tracts, commercial development, fire stations, streets and roads, combine to limit feasible response routes for Fire District resources. .

(b) Impact

Highly combustible dry grass, weeds, and brush are common in the hilly and open space areas adjacent to built-up locations six (6) to eight (8) months of each year. Many of these areas frequently experience wildland fires, which threaten nearby buildings, particularly those with wood roofs, or sidings. This condition can be found throughout Lafayette. Earthquake-induced fires due to gas line ruptures can ignite grasslands and stress fire district resources.

4. Summary

The above local geological and topographical conditions increase the magnitude, exposure, accessibility problems, and fire hazards presented to fire protection resources. Fire following an earthquake has the potential of causing greater loss of life and damage than the earthquake itself. Most earthquake fires are created by natural gas developed from gas line ruptures. Hazardous materials, particularly toxic gases, could pose the greatest threat to the largest number, should a significant seismic event occur. Public safety resources would have to be prioritized to mitigate the greatest threat, and may likely be unavailable for smaller single dwellings that were caused by broken gas lines.

Other variables may tend to intensify the situation:

1. The extent of damage to the water system
2. The extent of isolation due to bridge and/or freeway overpass collapse.
3. The extent of roadway damage and/or amount of debris blocking the roadways.
4. Climatic condition (hot, dry weather with high winds).
5. Time of day will influence the amount of traffic on roadways and could intensify the risk to life during normal business hours.
6. The availability of timely mutual aid or military assistance.
7. The large portion of dwellings with wood shake or shingle coverings (both on the roof diaphragm and sides of the dwellings) could result in conflagrations.
8. The large number of dwellings that slip off their foundations and rupture gas lines and electrical systems resulting in further conflagrations.

NECESSITY FOR STRICTER CONSTRUCTION STANDARDS

The above climatic, geological, and topographic conditions impact fire prevention efforts and the frequency, spread, acceleration, intensity and size of fire involving buildings located throughout the jurisdiction. By requiring excess flow gas shut-off devices in all new building construction and in certain remodeled buildings, the likelihood of fire and explosion will be reduces, thus not taxing resources of the Fire District. Further, the conditions impact potential damage to all structures from earthquake and subsequent fire. Therefore, because of the conditions described above, the City of Lafayette City Council finds that there are building and fire hazards unique to Lafayette that require the more restrictive fire protection and building standards set forth in Ordinance No. 564. The code section modified pursuant to Ordinance No. 564 is section 1210.0, 2007 California Plumbing Code.